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ABSTRACT

Among the conditions necessary for learning to occur within the educational process are those of intentionality and guidance. A learner must necessarily be allowed choice in entering into educational transactions. Autonomy on the part of the learner in the educational process is not an option, but a necessary condition for the proper functioning of education. The following items should be included in an agenda for inquiry about learning: (1) investigation of the possibilities of what can be learned (i.e.; categorization, explication, and enumeration of learning as product); (2) inquiry into the categories of learning (as product) that are worthwhile to study and learn (from the viewpoint of the individual and society); and (3) research into the conditions which engender and foster the learning process, i.e., the circumstances which can be established for promoting effective teaching and studying, leading to learning of deliberately chosen and clearly, unequivocally described products of learning. (PN)

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Possibilities and Conditions of Learning: An Educological Perspective

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Possibilities and Conditions of Learning: An Educological Perspective

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Any discussion about learning is complicated by the fact that the term, 'learning', suffers from the process-product confusion. In our ordinary, everyday language we make the term, 'learning', name both the process of coming to know and the product or outcome of that process -- knowledgeability, competence, expertise, capability. In the educational process, both learning as process and learning as product are important, for it is quite apparent that the proper function of the educational process is the engagement of human beings in the process of learning so that they might achieve the product of learning -- new capabilities, expertise, competence, perspectives.

If we think about the process of learning, for a moment, in terms of whether the person undertaking the learning is doing so with or without intention and with or without guidance, four combinations of these factors are possible: (1) engaging in the learning process without intention and without guidance; (2) learning with intention, but without guidance; (3) learning without intention, but with guidance; and finally (4) learning with intention and with guidance. These combinations of factors constitute some of the conditions under which learning can and does commonly occur.

The first set of conditions, without intention on the part of the learner and without guidance, is exemplified in the case of a fellow staying in a hotel room unfamiliar to him. The floor in the bathroom is slightly raised above the adjacent bedroom, just enough so that the unsuspecting guest stubs his toe painfully as he walks from the bedroom to the bathroom in his bare feet. After the first, painful encounter, he quickly (but unintentionally) becomes familiar with the configuration of the floor, and he has learned to take care to raise his feet as he enters that particular bathroom. Learning by accident or fortuitously characterises the first set of conditions for learning.

The second set of conditions, with intention on the part of the learner, but without guidance, is exemplied in the activities of trial and error, inquiry, and systematic research. It is exemplified in the work of Dr. Jonas Salk and his team of research associates in the 1950's. No one knew how to produce a vaccine that was effective in preventing polio, and no one even knew whether such a vaccine could be produced. Salk and his team undertook to produce a vaccine. Once they succeeded, then they could give guidance to others on how to make and administer the vaccine, but they, themselves, did not have anyone to guide them in their initial learning. Learning under this second set of conditions is characterised by intentionally undertaking to learn something, but without the guidance of a second party.

The third set of conditions for learning, without intention on the part of the learner, but with the guidance of a second person or set of persons is exemplified in the processes of classical conditioning, operant conditioning, and training. Much of the learning that takes place in the

process of socialisation operates with these conditions. Parents and family encourage daughters to be passive and sons to be aggressive. They encourage daughters to expect marriage, children, and housekeeping to be their normal and proper role, and they encourage sons to expect entry into the world of work, to earn a wage, and to exercise dominance over females, wife, and children. As another example, we all can recite jingles and slogans. How did we come to know them? A set of people deliberately guided us in learning slogans and associating them with certain scenes and products. We associate the name, "Coca Cola," with happy people and good times. We associate the name, "MacDonald's" with hamburgers and "the Golden Arches." We associate the name, "Marlboro Country," with a ruggedly handsome cowboy. Yet we did not intentionally undertake to learn such things. This learning took place under the guidance of someone (advertising specialists and public relations agents) without our intentionality as learners.

The fourth set of conditions for learning, with the intentionality of the learner and with the guidance of a second person, is exemplified in the case of Johann Sebastian Bach, the great composer and organist of the eighteenth century. Many people came to him to plead that he accept them as students so that they might learn to play the organ under his guidance. He sent many away, and some returned to plead their case a second or a third time. With a few he relented and accepted them as students. They in effect put themselves under his discipline in order to develop their artistry as organists. Their learning was undertaken intentionally and with guidance.

Learning which proceeds under this fourth set of conditions is that which operates within the educational process. Someone intentionally undertakes to learn something under the guidance of someone in some setting. The someone undertaking to learn may be an aunt, a cousin, a farmer, a policemen, a college student or a primary school pupil. The someone offering the guidance might be a clerk, a housewife, a grandfather, a daughter, a university professor, a secondary school teacher. Examples of intentional and guided learning include these. A boy asks his friend to show him how to fly a kite, and the friend helps him to learn. A woman accepts a new job as a telephone technician and receives instruction in telephone installation, maintenance, and repair.

While intentional and guided learning is closely related to the educational process, it is not identical with it. Learning under the conditions of intentionality and guidance is the same as effective education, or successful education. When education is unsuccessful, the attempt is being made to achieve learning, but the effort is ineffective. And this happens often. Someone tries to learn something under guidance, but she or he does not succeed to any appreciable degree. Such a process is not learning (because learning is not occurring), but it is education.

This notion of placing oneself under the guidance of another in order to learn is a crucial one, for it implies that the issue of whether to grant pupils and students in schools greater or lesser autonomy is a bogus one. Choice is a necessary part of autonomy, and autonomy is a necessary condition of the educational process. If the person playing the role of student is not allowed to choose to enter intentionally into

the educational process, one of the necessary conditions of the educational process to function is missing. Indoctrination, conditioning, and training are possible without the intentionality of the one doing the learning, but not education. This is not to say that the teacher should never prepare a curriculum or that the student must always construct the curriculum which she or he wishes to study. It is the nature of the educational process that the teacher usually has greater expertise than the student, and it is proper that the teacher be called upon to use that expertise to assist her or his student. Why else would the student enter into an educational transaction with the teacher? The main point is that the student must be allowed to choose to learn. Education is a matter of laying out opportunities to learn something in some setting, on the one hand, and taking advantage of those opportunities to learn something, on the other. Autonomy of the learner in this process is essential to the proper functioning of education, wherever it might be operating -- in families, churches; among peers and friends; in commerce and industry; or in schools, colleges, academies, institutes, and universities.

In addition to assuring autonomy of the learner, another important consideration in establishing conditions for learning is that of what the person playing the role of student might undertake to learn. What is it that is possible to learn and of that which is possible, what is it that is worthwhile to learn? Among the many viewpoints that have been advanced in relation to these issues is the process vs. product debate. The product-oriented argument is that there are essential sets of knowledge that all people must learn in order to be culturally competent and adequately functioning members of society. The process-oriented argument is that in the rapidly changing world of contemporary times, new knowledge is pushing aside old so rapidly that it has become impossible to predict what will be essential to know. Under such circumstances, it is far better to develop the disposition and expertise to engage in the process of inquiry and problem solving.

Sometimes this process vs. product debate becomes muddied by the assertion that the process orientation is opposed to a content orientation. But this is both misleading and a misstatement of the argument. The educational process is necessarily made up of four components: teacher, student, setting, and content. The content, that which teacher and student transact with in order for the student to learn, may be the process of inquiry, or it may be the product of the process of inquiry. Scientists engage in the process of inquiry, and if their inquiry is successful, they produce new propositions about the physical and natural world. These propositions can be organised into curricula and taught and studied in courses such as physics, biology, botany, or chemistry. The teaching and studying of the products of inquiry (i.e., funds of knowledge named physics, biology, etc.) is education with a product-oriented curriculum. Continuing with the example of science, we can, of course, arrange science curriculum with a process orientation. This requires that teachers engage students in the process of inquiry, as scientists, without certain knowledge of what the inquiry might produce (but with hypotheses and reasonable expectations regarding the outcome of their inquiries). Moreover, the teaching and studying of the process of inquiry are not necessarily exclusive of

the teaching and studying of the products of the process of inquiry. The content could reasonably include both. So, the question of whether students should transact with a process-oriented or a product-oriented curriculum is not one of process vs. content. It is one of whether the content should consist primarily of the process of inquiry or the products of the process of inquiry. Both are content, and the process vs. product debate is an issue of which content should be taught and studied.

Another issue which sometimes becomes conflated with the process vs. product debate is the argument for the process of co-operative learning vs. competitive learning. This second argument is not so much about what should be learned as how it should be learned. It is an argument about favourable conditions for learning. Within the educational process, teachers and students can agree to work under conditions in which students are in competition with each other. Under such conditions, the issue of which students learn first or quickest becomes quite an important one. Normally, the students who are the quickest learners, under this competitive system, receive the prizes and rewards which the system has to offer. The slowest learning students, of course, receive the least number of prizes and rewards, and a difficulty of motivation arises. Who is going to choose to play a game in which they constantly lose and have no hope in ever winning? In contrast, within the educational process, teachers and students can agree to work under conditions in which students are in co-operation with each other. They work to assist each other to learn. The student who is blessed with faculties that enable she or he to learn quickly can turn around and assist fellow students who are not as fast at learning. And being of similar age and experience, one student can often give more appropriate assistance to a fellow student than can the professional teacher. The students speak in the same idiom and share similar emotional, social, and conceptual viewpoints. In the circumstances of co-operative learning, there are no winners and losers, only learners who have as one of their obligations the responsibility to assist each other in learning tasks. Lack of motivation from constantly losing in the competitive learning game presumably is obviated. The essence of co-operative learning is exemplified in the words of this primary school pupil: "It doesn't matter if I make a mistake in this, does it, because I'm only learning it. And if I make a mistake, Mary [a fellow classmate] will help me, won't she? And it's okay, if she helps me, isn't it?"

Sometimes the argument for a co-operative learning environment is linked with the argument for a process-oriented content. The presumption is made that one implies the other. But this is not necessarily so. The products of inquiry (a product-oriented curriculum) can be taught and studied within a competitive learning environment, just as they can within a co-operative learning environment. And the argument goes for the other situation, as well. The process of inquiry can be taught and studied within a competitive learning environment as well as within a co-operative learning environment.

The product of the learning process, i.e., knowing, knowledgeability, competence, realised capability, has the been the object of much attention over many years. All of the work on educational

objectives can be regarded as efforts to identify, categorise, and enumerate the possibilities of what can be learned. Examples of such efforts from the 1950's and 60's include those of Bloom et al., Krathwohl et al., Taba, and Gagne (see Figure 1).

BLOOM, KRATHWOHL, ET AL.	TABA	GAGNE
COGNITIVE DOMAIN	KNOWLEDGE	INTELLECTUAL SKILLS
AFFECTIVE DOMAIN	SKILLS	COGNITIVE STRATEGIES
PSYCHOMOTOR DOMAIN	ATTITUDES	VERBAL INFORMATION
		MOTOR SKILLS
		ATTITUDES

Figure 1: Categorisation of Products of Learning

More recent efforts at categorisation include those of Biggs and Collis, Steiner and Maccia, and Christensen (see Figure 2).

BIGGS AND COLLIS	MACCIA	STEINER	CHRISTENSEN
PRESTRUCTURAL LEARNING	KNOWING THAT ONE	QUALITATIVE KNOWING	LINGUISTIC KNOWING
UNISTRUCTURAL LEARNING	KNOWING THAT	QUANTITATIVE KNOWING	EMOTIONAL KNOWING
MULTISTRUCTURAL LEARNING	KNOWING HOW TO DO	PERFORMATIVE KNOWING	IMAGINAL KNOWING
RELATIONAL LEARNING	KNOWING WHAT TO DO		PHYSICAL KNOWING
EXTENDED ABSTRACT LEARNING			PHYSIOLOGICAL KNOWING
			CONATIVE KNOWING

Figure 2: Alternative Categorisations of Products of Learning

It is a difficult task to establish a system of categories which (1) includes all products of the learning process (i.e., all of the possibilities of learning in the sense of product), (2) is made up of completely mutually exclusive categories, and (3) has a high degree of utility for planning, implementation, and evaluation in the educational process. For example, the categories of knowledge, skills, and attitudes (Taba) are not mutually exclusive in all cases, nor are the categories of cognitive, affective, and psychomotor (Bloom). This is an area in which there is much room for investigation and improvement.

In relation to the process of learning, there is also much room for research and improvement. It is important to gain recognition and appreciation throughout the society of this fact: Among the conditions that are necessary for learning to occur within the educational process (whether inside or outside of schools, colleges, and universities) are

those of intentionality and guidance. A learner (i.e., person playing the role of student) must necessarily be allowed choice in entering into educational transactions. Autonomy on the part of the learner (student) in the educational process is not an option, but a necessary condition for the proper functioning of education. Although much work has been done on identifying conditions which are favourable for engendering effective study and the achievement of learning within education, the definitive work has certainly not been written.

If an agenda for inquiry about learning were to be drawn up, the following items should surely be included:

(1) Investigation of the possibilities of what can be learned (i.e., categorisation, explication, and enumeration of learning as product);

(2) Inquiry of the categories of learning (as product) that are worthwhile to study and learn (from the viewpoint of the individual and the society);

(3) Research into the conditions which engender and foster the learning process, i.e., the circumstances which can be established for promoting effective teaching and studying, leading to learning of deliberately chosen and clearly, unequivocally described products of learning.

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